

MemCard^{PRO}₂

USER MANUAL



for
PlayStation 1 / PlayStation 2



Requires a
microSD card



WiFi and
Connected Features

INTRODUCTION

The MemCard PRO2 is a modern reimplement of the original Memory Cards for the PlayStation 1 and PlayStation 2 consoles.

By utilising a powerful dual-core 240MHz microcontroller, it is able to provide mass storage through a microSD card or USB interface to the Memory Card slot of your console. This allows the card to create an extraordinary amount of Virtual Memory Cards (VMCs) for your games.

On top of that, it is able to connect to your local wireless network, and provide more features through an intuitive Web User Interface (WebUI).

Finally, it implements a proprietary set of commands that allows other devices and peripherals, like optical drive emulators or home-brew software, to communicate with the card, for automated card switching and game detection.

With the MemCard PRO2 you can forget about stacks of Memory Cards, and running out of storage space at the most crucial moment of your gaming experience.

INITIAL SETUP

The MemCard PRO2 requires a formatted microSD card in order to work. Any microSD card rated Class 4 and above will work, from 1GB to 2TB. Each gigabyte of storage space amounts to approximately 128 8MB VMCs for the PS2 or 8192 VMCs for the PS1. On the PS2, you can also configure the default size of your VMCs with all options available up to 128MB**.

To prepare your microSD card, you will need a computer and a microSD card reader (or a full size SD card reader with a microSD to SD card adapter).

Download the official "SD Card Formatter" software from the SD Card Association: <https://www.sdcard.org/downloads/formatter/>

Run the formatter and select your SD card. Select "Quick Format" and give it a "Volume Label" if you'd like. Press the "Format" button.

You will also require the MemCard PRO2 latest firmware and operating system. You can download the file from the following link: https://install.appcenter.ms/orgs/beta-ucu9/apps/memcard-pro2/distribution_groups/public

Once you download your file, extract its contents to the newly-formatted microSD card. You should have two new items in the root folder of your card:

- mcp2.bin (file)
- os (folder)

Safely-eject your microSD card from your computer and plug it into the microSD card slot of your MemCard PRO2.

If you prefer to use a USB storage device instead of a microSD card to store your saves, you can do that by connecting a flash drive or external SSD or HDD drive. However, please make sure that you power it externally, as the MemCard PRO2 USB port does not supply any power.

Make sure you format your drive with a simple MBR partition scheme and FAT32 or exFat file system. Then you can prepare the files in the same way as described above for the sd card.

Please Note: if you decide to replace the microSD card or USB device on your MemCard PRO2, you will need to repeat the instructions on this page for the new microSD card or USB device.

You can now plug the MemCard PRO2 in to either slot of your PlayStation 1 or PlayStation 2 console.

Basic usage

1. Plug your card in to Slot 1 or Slot 2 of your PlayStation 1 or PlayStation 2 console..
2. Power up your console. The logos "8BITMODS.COM" and "MemCard PRO2" will appear on the OLED display in this order.
3. The MemCard PRO2 will then load a VMC and display its name on the display. The first time you power up the card, "MemoryCard1" will be created on your storage device, and it will be loaded and displayed on the MemCard PRO2 OLED display (see fig. 1). Depending on the system you plugged the card into, either "PS1" or "PS2" will be shown on the display.
4. As soon as your game launches, it will detect the Memory Card. In-game usage is the same as any normal Memory Card, which means you can save and load games as you'd normally do.
5. Each Virtual Memory Card provides 8 channels of extra virtual cards. You can think of each channel as an extra whole memory card that you can use in your games. Each channel will provide storage for the preconfigured size depending on the console..
6. You can switch channels using the buttons on the device, or through the WebUI. Most games support memory card hot-swapping, and the MemCard PRO2 simulates the hot-swapping action every time you change a Channel or VMC.
7. To go to the next channel, you can press the right physical button on the MemCard PRO2, or through the WebUI.





PS2 SD 8MB
Gran Turismo 3 A-Spec
SCES-50294 Ch: 1

Fig. 1: The display during normal operation, showing the status icons at the top, loaded VMC name in the middle row and GameID and selected channel at the bottom row.




8. To go to the previous channel, you can press the left physical button on the MemCard PRO2 or through the WebUI.
9. In order to cycle through the available Virtual Memory Cards, press and hold the right physical button on the device. The next VMC will be loaded.

Display Icons:

The OLED display of the MemCard PRO2 has a row of status icons that depict the current status and activity. These are, from the left:

- **PS1 Console activity:** This icon depicts the active console mode. When it animates, data is being exchanged with the system.
-  /  **Storage Device Activity:** Depending on the storage device you've connected to the MemCard PRO2, this will either display an "SD" icon or a "USB" icon. When this icon flashes, the MemCard PRO2 is actively writing data to the device. Make sure you don't power off or disconnect the device to prevent data loss.

Display Icons (cont.)

- **Wireless Network:** This icon can show the current status of the WiFi transceiver on the Memcard PRO2. There are a few different icons that can be displayed here:
 -  : The WiFi Radio is currently off. Press and hold both buttons on the device to enable WiFi Access Point Mode.
 -  : The WiFi is on and is actively transmitting an Access Point. You can connect to it to start the WiFi setup wizard (page 7).
 -  : The WiFi radio is connected to your local WiFi network. The solid bars indicate the connection strength to your router.
- **128KB | 8MB | VMC Size:** The last icon displays the size of the mounted VMC file in kilobytes or megabytes, depending on the active console mode. Possible values are:
 - 128KB (PS1 mode only)
 - 8MB, 16MB, 32MB, 64MB, 128MB (PS2 mode only)

Using with a home-brew launcher (GameID)

The MemCard PRO2 implements a common communication protocol, that allows home-brew to send the unique Game ID that is being launched to the card. This allows the MemCard PRO2 to identify which game is being launched, and automatically create a VMC for that specific game. If the VMC already exists, it will mount it, making it easy to forget about switching to the right VMC that has your game saves for that specific game.

Furthermore, it allows the MemCard PRO2 to make use of its internal game database, and show the full name of the game you are playing.

You don't need to do anything to enable this functionality. It is enabled by default, when a game is launched via a home-brew launcher, from any storage method.

While every effort has been made to add all known games to the database, some may still be missing. If you find a game that shows the GameID instead of a full name on the display, please let us know, and we will add it with a firmware update.

Known limitations:

- In the case where the MemCard PRO2 cannot determine the GameID of the game being launched, it will revert to the first available generic VMC (MemoryCard1). If you think that the game ID is detected correctly in your home-brew launcher,

Limitations & Exceptions

but not detected by the MemCard PRO2, please reach out to us and we will add it to the database in the next firmware update.

- GameID is only possible when paired with a compatible home-brew launcher. At the moment of writing, the only compatible home-brew launcher is OPL, however this has not yet been merged in the official branch. (Credit for the GameID module: Copyright 2023 Matías Israelson. The source code can be obtained on the following URL: <https://github.com/ps2homebrew/Open-PS2-Loader>

Please note that downloading and using the OPL version linked below is at your own risk, and by downloading it you agree not to hold us liable for any problems or issues that may arise to yourself or your equipment from doing so.

You can download a GameID version of OPL from the following links:

Latest OPL with GameID: https://install.appcenter.ms/orgs/beta-ucu9/apps/opl-with-gameid/distribution_groups/public

Grimdoomer's OPL with HDD exFat + GameID: https://install.appcenter.ms/orgs/beta-ucu9/apps/opl-with-lba64-gameid/distribution_groups/public

WiFi & Remote Features

1. The MemCard PRO2 can connect to your local wireless network and allow you to change its hardware settings and manage the card's state and storage remotely. In order to connect your MemCard PRO2 to your local wireless network for the first time, please follow the instructions below.
2. With a storage device plugged in and the MemCard PRO2 connected to your console, power up your console and wait until the MemCard PRO2 shows the default screen on its display (Fig. 1).
3. Press and hold both buttons on the MemCard PRO2 to activate the Access Point mode.
4. Using a Computer or Mobile device (phone or tablet), bring up the Wireless Networks. You should see a new network available in your area, called "MemCardPRO2-(serial number)". Select it to connect to it.
5. Once you select the MemCard PRO2 access point, it will ask you for a password. The password is **mcpadmin**
6. Select OK or Connect. Your device should connect to the MemCard PRO2 access point.
7. Open your default Web Browser, and navigate to the following URL: <http://192.168.4.1>
8. You will be greeted by the WiFi Setup Wizard. Follow the instructions on your screen to complete the setup and connect your MemCard PRO2 to your wireless network.
9. On the final step the device will automatically restart after you click the button. The MemCard PRO2 access point will disappear and your device should connect back to your local wireless network. If this doesn't happen, please manually re-connect to your wireless network.
10. After the card finishes restarting, it should be connected to your wireless network.
11. To access the WebUI, you need to find the MemCard PRO2's assigned IP address first. Keep an eye on the display of the MemCard PRO2 during boot up. The display will change to show the assigned IP address. Write this down somewhere convenient, and use it to access the WebUI from any device connected to the same network as your MemCard PRO2.

For example, if your MemCard PRO2's IP address was "192.168.1.230", open a web browser on a computer or mobile device, and type it in the address bar like "<http://192.168.1.230/>"
12. If you did everything right, you should be looking at the home page of the MemCard PRO2 WebUI.

The WebUI

After setting up the WiFi in the previous chapter, you should now be able to access the WebUI.

The WebUI allows you to do a couple of things that are not normally possible in any other way. You can

- See the mounted VMC and Channel from any remote device
- Force-mount any VMC
- Remotely browse your VMCs and download or upload files
- Change the device settings

The WebUI also allows you to perform a firmware update remotely, by checking for the latest version and informing you of a newer version than the one installed in your MemCard PRO2.

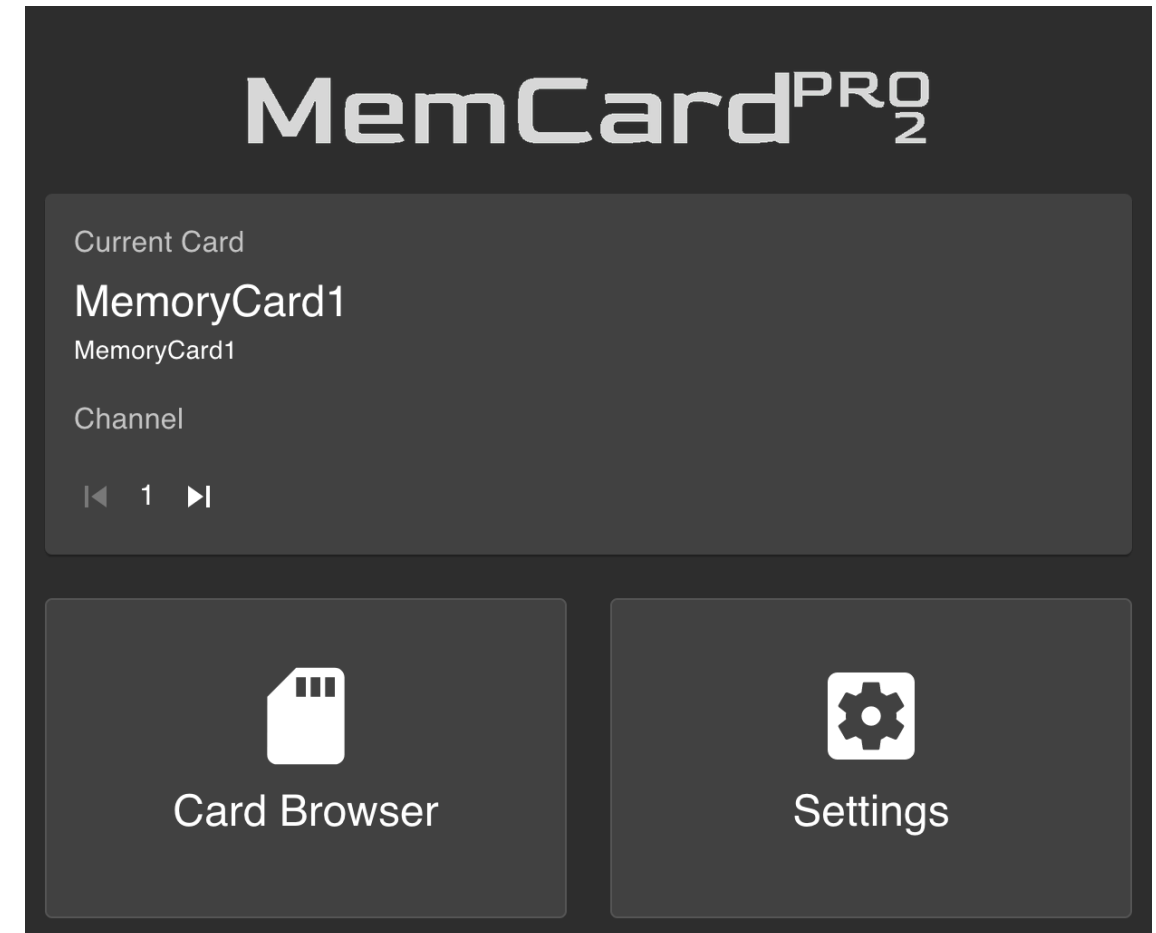
WebUI Home Page

The Home Page of the WebUI shows you information on the current VMC, and info detected from the home-brew launcher if you are using one. It also allows you to change the current VMC channel with the click of a button.

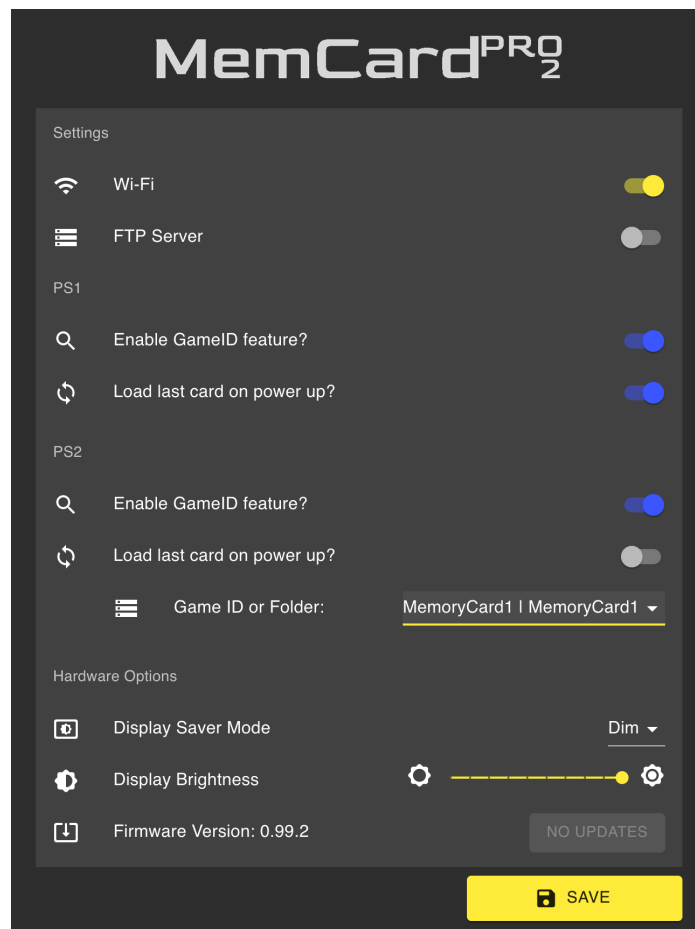
On the top side, the card name or game name is displayed. In home-brew mode, the unique GameID is also displayed below the card name.

The current channel is also displayed, and two arrow buttons next to it. Clicking the left or right buttons will switch to the previous / next channel accordingly.

There are also two buttons that allow you to navigate to the Card Browser and the Settings.



WebUI Settings Page



The Settings page allows you to configure your MemCard PRO2. The available options are:

- **Wi-Fi Switch:** Allows you to turn off the WiFi receiver / transmitter on MemCard PRO2. **Please note** that doing so will completely turn off the WiFi radio. You can re-enable the wi-fi radio by re-starting the WiFi pairing process..
- **FTP Server:** This feature enables a lightweight FTP server on your MemCard PRO2 which lets you remotely browse and manage the files on the connected storage device.
- **Enable GamelD Feature:** This enables or disables switching VMCs automatically when paired with a compatible home-brew launcher.
- **Load last card on power Up:** This feature allows you to enable / disable loading the last used VMC automatically on power up. This option is enabled by default and can be set separately per console mode. If this setting is disabled, the following will appear:
- **GamelD or Folder:** This setting allows you to choose the default memory card that will load when the MemCard PRO2 boots. The option is available separately for both systems.

- **Display Saver Mode:** This option allows you to select what MemCard PRO2 does when triggering the display saver mode. The available options are "Dim" and "Turn Off". OLED displays are naturally bright, but can suffer from burn-in when showing static text for long period of times. In order to reduce the effect of this, MemCard PRO2 will automatically dim or turn off the display after 30 seconds of inactivity. When there is activity it will automatically brighten or turn on the display, until the next period of inactivity.
- **Display Brightness:** You can select the display brightness by moving the slider. MemCard PRO2 offers 10 steps of brightness. This is the "bright" mode, and doesn't affect the brightness of the dimmed mode - which is always at the lowest scale.
- **Firmware Version & Update:** The currently installed firmware version is displayed here. Upon loading this page, MemCard PRO2 will check the latest available version on the remote server and enable the button if a newer version is available.

Card Browser

The Card browser is a utility in the WebUI that allows you to view, manage and load your VMCs remotely.

When you visit the Card Browser for the first time, you will be greeted with just the default memory card that were created when you booted up the device for the first time.

To refresh the card contents, press the blue "Scan" button. The MemCard PRO2 will start scanning your storage device for VMCs and it will add them to the Card Browser. This only needs to be done once.

Once scanning is complete, the table will show the available VMCs on your microSD card.

You can switch between systems by flipping the PS1/PS2 switch. Each list is shown separately. Mounting a VMC from a specific system will switch the mode to that system automatically.

You can now create a new VMC, rename your VMCs, mount them remotely or delete them. If you use an home-brew launcher or ODE, the VMC will be added to this list automatically.

MemCard^{PRO2}

Current PS1 Card

MemoryCard1

MemoryCard1

Channel

◀ 1 ▶

PS2 ☒

↻ +

Info	Card Name	GameID	Actions
	SLUS-2018	SLUS-2018	⋮
	SCUS-9732	SCUS-9732	⋮
🎮	MemoryCard1	MemoryCard1	⋮
	Resident Evil - CODE Veronica X	SLUS-20184	⋮
	Grand Theft Auto - San Andreas	SLUS-20946	⋮
	Metal Gear Solid 3 - Snake Eater	SLUS-20915	⋮
	God Hand	SLUS-21503	⋮
	Outrun 2006 - Coast 2 Coast	SLUS-21274	⋮

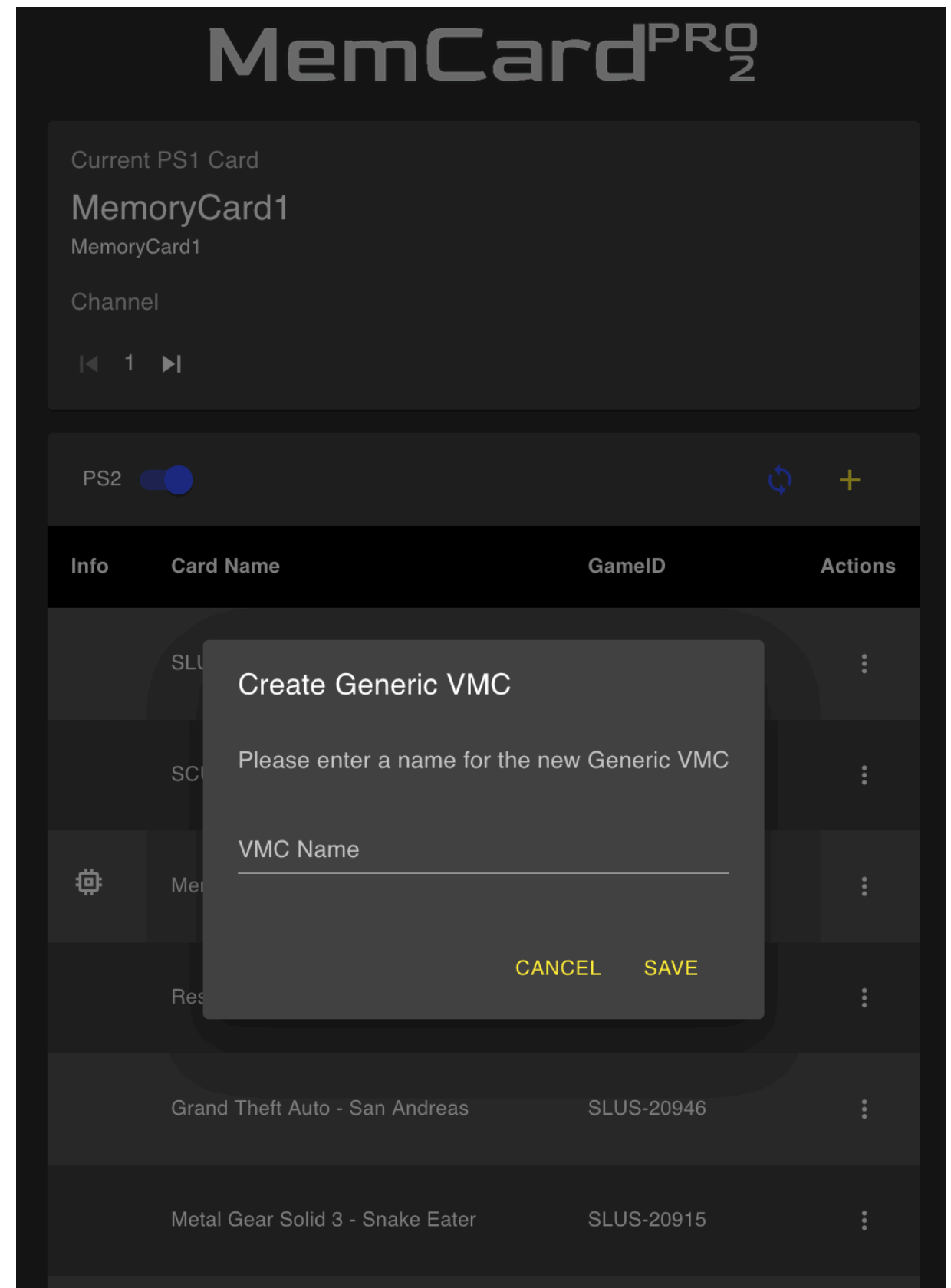
Rows per page: 10 ▼ 1-8 of 8 < >

Card Browser

When you create a new VMC you are prompted to enter a name for it and select its size (for PS2 only). You can use any name you like for it. This name you choose will be displayed on the OLED display when you mount it.

You can also rename any VMC that you've created before, or VMCs that were generated through the GameID mechanism. Renaming them will override their default name, but their GameID will still be associated with the game and will be displayed when a GameID is received.

To rename your card, simply press the white "edit" button. A pop up will appear with a prompt to enter the new name. Once you are happy with the name, click on the "Save" button and the name will be saved to the MemCard PRO2 database.



FTP Server

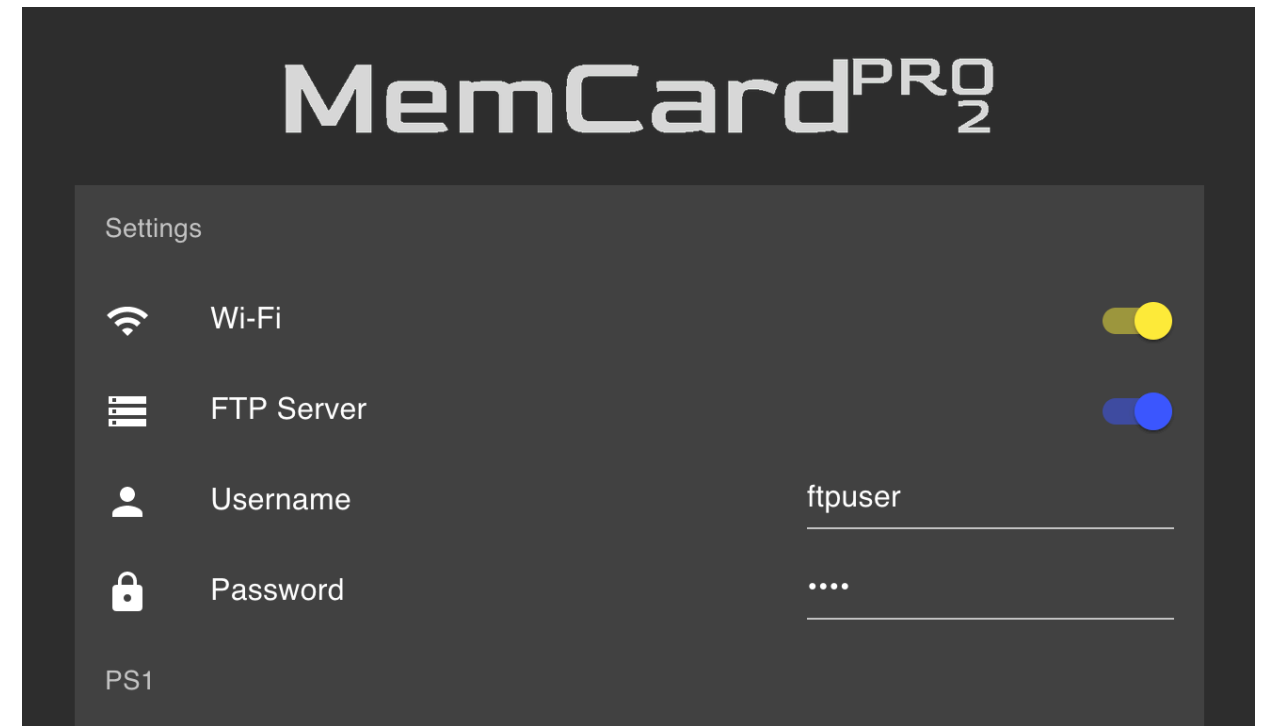
The MemCard PRO2 can host a simple lightweight FTP server (when connected to your home WiFi) which allows you to wirelessly browse and manage your connected storage device's contents, as well as download and upload files directly to it, through an FTP client application on your computer.

The FTP Server is disabled by default and can only be enabled when the WiFi is on and connected to your home wireless network.

To enable the FTP Server, navigate to the WebUI and switch the toggle of the "FTP Server" option in the Settings page.

Once enabled, the "Username" and "Password" fields will show up. You can enter a username and password of your choice to secure the FTP server. This is mandatory, anonymous FTP access is not supported on the MemCard PRO2.

Once you've entered a username and password, click the "Save" button. You will need to manually power-cycle your PS1 / PS2 console / MemCard PRO2 for the changes to take effect.



FTP Server (Cont.)

In order to access the FTP Server, you will need an FTP Client on your computer. We strongly recommend using "FileZilla", an open source, free FTP client that has been tested with MemCard PRO2.

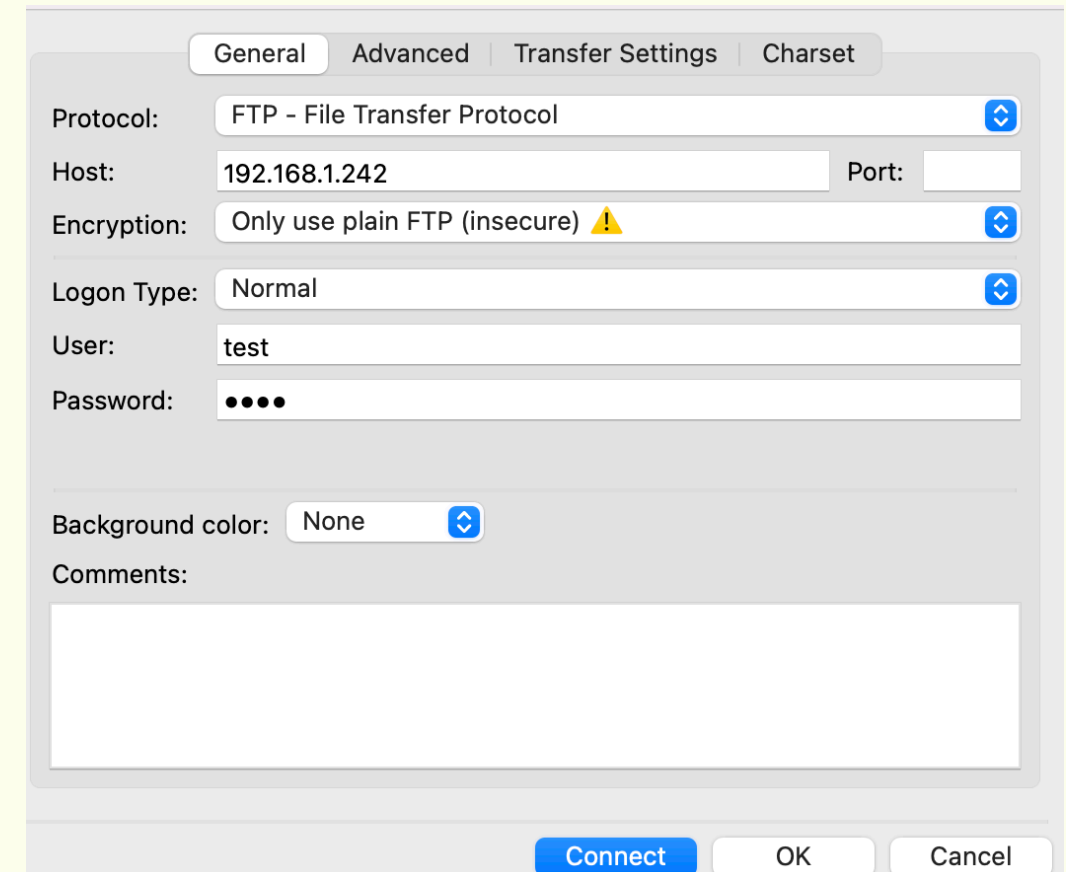
Create a new FTP Connection, and make sure you match the settings on the screenshots on this page for the MemCard PRO2 FTP Server to work correctly.

Multiple connections and Active mode are not supported on the MemCard PRO2 FTP Server, and the settings will need to match that.

In the "Host" field, enter your MemCard PRO2's IP address, and choose the "Only use plain FTP" option in the encryption field. Make sure that the username and password you enter here matches the one you entered in the Settings page.

Next, click on the "Transfer Settings" tab. Choose the "Passive" transfer mode, and check the box next to "Limit number of simultaneous connections". Set a value of "1" for the "Maximum number of connections".

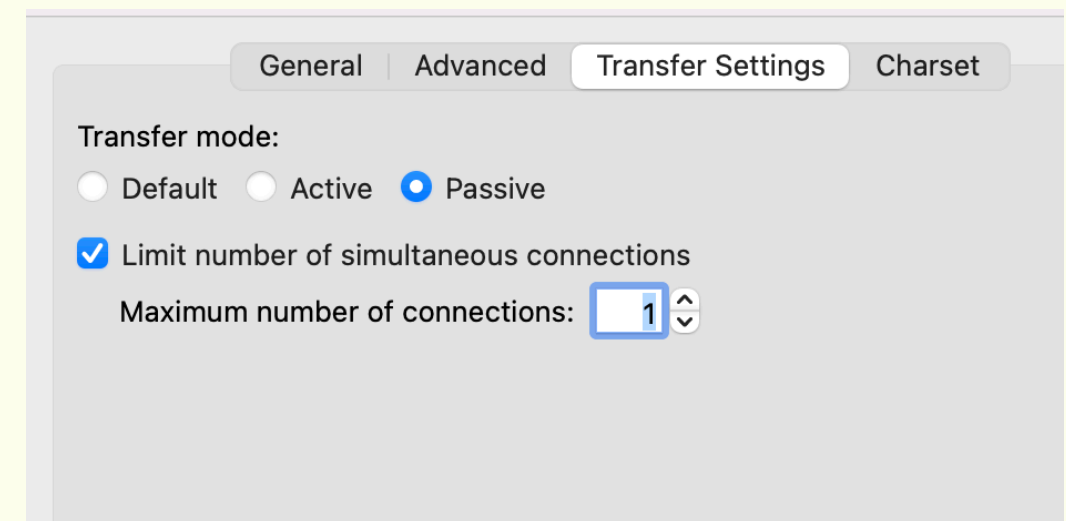
If you've done everything correctly, clicking "Connect" will connect you to the MemCard PRO2 FTP Server and list the contents of your SD card!



This screenshot shows the 'General' tab of the FileZilla connection dialog. The settings are as follows:

- Protocol: FTP - File Transfer Protocol
- Host: 192.168.1.242
- Port: (empty)
- Encryption: Only use plain FTP (insecure) ⚠️
- Logon Type: Normal
- User: test
- Password: (masked with dots)
- Background color: None
- Comments: (empty text area)

At the bottom, there are three buttons: 'Connect' (highlighted in blue), 'OK', and 'Cancel'.



This screenshot shows the 'Transfer Settings' tab of the FileZilla connection dialog. The settings are as follows:

- Transfer mode: ☐ Default ☐ Active ☒ Passive
- ☒ Limit number of simultaneous connections
- Maximum number of connections: 1

Mass Storage Mode

The MemCard PRO2 can be used as a USB Mass Storage device when connected to a compatible host machine that supports Mass Storage devices.

This allows you to use the MemCard PRO2 as a simple microSD card reader and transfer files between your computer / device and the MemCard PRO2 microSD card.

To start the MemCard PRO2 in Mass Storage Mode, hold down the right button and connect a usb cable to your computer or device and the MemCard PRO2 USB port. Continuer holding until the MemCard PRO2 logo comes up on the display with the text "Mass Storage Mode" underneath.

You can now let the button go. After a few seconds, your computer or device will recognise the MemCard PRO2 as a Mass Storage device and a new drive icon should appear on your file browser. You can now use it as a normal microSD card reader to transfer files.

Please note that this feature is not intended to replace your normal microSD card reader. While it is a fully featured mass storage device, the speed is limited and therefore it is not ideal for transferring large files.

FAQs & Troubleshooting

1. What file system formats does the MemCard PRO2 support?

The MemCard PRO2 only supports a simple MBR partition scheme with a FAT32 or exFat volume. Please use the official SD Card Formatter software for maximum compatibility.

2. Can the MemCard PRO2 work without an SD card or USB Flash Disk?

The MemCard PRO2 requires either a microSD card or USB flash disk to be connected in order to function correctly.

3. What consoles does the MemCard PRO2 support?

The MemCard PRO2 has only been tested with the original PlayStation 1 and PlayStation 2 consoles..

4. What VMC card formats does the MemCard PRO2 generate / support?

The MemCard PRO2 can only create and use raw Memory Card images. The file extension used is ".mc2" and the files have no extra headers. Any header-less memory card image can be used with the MemCard PRO2, as long as it is properly named and has the .mc2 extension.

5. Can I use my MemCard PRO2 saves with an emulator / Can I use my emulator saves with MemCard PRO2?

Yes! Both use cases are possible as long as the files used have no extra headers.

6. I have connected my MemCard PRO2 to my local wireless network, but I can't open the WebUI page!

A few different causes can lead to this, with the most common being that the remote device is not on the same subnet as MemCard PRO2. You should be connected to the same network as the MemCard PRO2 in order to access its WebUI.

Another reason is that the MemCard PRO2 was unsuccessful connecting to your wireless network. You can try moving the console and MemCard PRO2 closer to your router if that's the case, or changing the WiFi channel of your router to one that's not used by other routers around your building.

If you don't see an IP address on the MemCard PRO2, and the WiFi icon shows an "x", this means that the connection was unsuccessful.

Finally, if a blank white page with an error message comes up, then this means that the sd card was not prepared properly and that the "os" folder is missing or in the wrong place. Please follow the setup instructions on this manual carefully and try again.

FAQs & Troubleshooting

8. Can I disconnect from my router and “forget” the associated WiFi SSID?

Yes, you can do that by pressing and holding both physical buttons on the MemCard PRO2 while it is booting up. A message will appear, and once you release the buttons, the MemCard PRO2 will reset to Access Point mode. You should be able to scan for the access point and start the WiFi Setup Wizard again. Please note that this will reset your MemCard PRO2 settings to the factory defaults, but will not erase any of your save data.

9. I disabled the WiFi from the settings page, but now I want to enable it again. How can I do that?

You can re-connect to the WiFi by pressing down and holding the left button on the device. Once the message “Release for WiFi” appears on the display, release the button and the MemCard PRO2 will attempt to connect to your associated WiFi.

10. ** I can't find any settings to enable different size PS2 memory cards or Cloud Backups! Is my card faulty?

At the moment of writing these features have not been released to the public yet. We are still testing them to make sure they don't cause any loss of data before we make them available to everyone. Please rest assured that the features will be enabled very soon with a firmware update, as soon as we confirm that the core functionality of the card is stable enough! We appreciate your patience.

Declaration of Conformity

Manufacturer:

AppCake LTD
Suite C Unit B, Thames House
Waterside Drive
Langley, England, SL3 6EZ
UNITED KINGDOM
hello@8bitmods.co.uk
8bitmods.com

AppCake LTD declares under our sole responsibility that:

Product Name: MemCard PRO2

Product Model(s): MCP201

Complies with the following European Directives:

2014/30/EU Electromagnetic Compatibility (EMC)

2014/45/EU Low Voltage (LVD)

2015/863/EU on the Restriction of Hazardous Substance (RoHS3)

Conforms to the Following Standards:

EN 301489-1 V2.2.3 (2019-11) (EMC emissions and interference)

EN 301489-17 V3.2.4 (2020-09) (EMC emissions and interference)

EN 62368-1:2014+A11:2017 (LVD)

EN 63000:2018 (RoHS)

The technical documentation required to demonstrate that the products meet the requirements of the aforementioned directives has been compiled and is available for inspection by the relevant enforcement authorities.

Signed:

Title: Director

Date: 14/12/2023